THE OFFICE ACTION

In the Office Action issued February 26, 2007, the Examiner rejected claims 1-5, 8-11, 16-23, 25, 26, 28-41, 44 and 46 under 35 U.S.C. 103(a) as being unpatentable over WO 2004/032576 to Boerner, et al. ("Boerner") in view of U.S. Patent 6,771,019 to Wu, et al ("Wu"). Claims 6, 7 and 48 were rejected under 35 U.S.C. 103(a) as being obvious over Boerner and Wu and further in view of U.S. Patent 6,469,435 to Seibold, et al. ("Seibold"), and claims 12-14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Boerner and Wu and further in view of U.S. Patent Application Publication 2002/0122895 to Cheong, et al ("Cheong"). The Examiner rejected claim 24 under 35 U.S.C. 103(a) as being unpatentable over Boerner and Wu and further in view of WO 99/16847 to Burns, et al ("Burns"). Claim 27 was rejected under 35 U.S.C. 103(a) as being unpatentable over Boerner and Wu and further in view of U.S. Patent 5,909,081 to Eida, et al. ("Eida") and claims 52 and 53 were rejected under 35 U.S.C. 103(a) as being unpatentable over Boerner and Wu and further in view of U.S. Patent 6,608,439 to Sokolik, et al ("Sokolik"). Claims 15, 42, 43, 45, 47, 50 and 51 were objected to by the Examiner as being dependent upon a rejected base claim.

Allowable Subject Matter

Applicant respectfully acknowledges and appreciates the indication by the Examiner that Claims 15, 42, 43, 45, 47, 50 and 51 contain allowable subject matter.

Claim Rejections Under U.S.C. § 103

The Examiner has again rejected Claims 1-5, 8-11, 16-23, 25, 26, 28-41, 44 and 46 under 35 U.S.C. § 103(a) as being unpatentable over Boerner in view of Wu.

With respect to independent Claim 1, the Examiner asserts that Boerner discloses (Fig. 1; page 5, lines 1-20) a pixel sub-structure of a colored electroluminescent display comprising at least two sub-pixels, each comprising a blue light emitting electroluminescent phosphor 3 and at least one photoluminescent phosphor layer 7 being associated with one of the blue sub-pixels such that the blue light emitted by each respective one of the sub-pixels is substantially absorbed by the

associated photoluminescent phosphor layer thereby causing to emit colored light other than the blue light. The Examiner asserts that the recitation of "for a thick film dielectric electroluminescent display" occurs in the preamble, which is generally not accorded any patentable weight if it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness.

The Examiner acknowledges that Boerner does not disclose that the blue electroluminescent phosphor in Boerner is an inorganic phosphor.

The Examiner asserts, however, that Wu in the "same field of endeavour discloses (column 18, lines 56 to 57) use of inorganic strontium sulfide as a blue phosphor. The selection of known material for its suitability for the intended use is within the skill of the art." The Examiner further asserts that it would have been "obvious to one of skill in the art at the time of the invention to use inorganic electroluminescent phosphor for blue phosphor in the first layer of Boerner as suggested by Wu" (emphasis added).

Moreover, the Examiner asserts that Boerner does not exemplify the electroluminescent layer 3 being organic and hence it is the position of the Examiner that Boerner's display can well be used with inorganic light emitting phosphors.

Applicants respectfully disagree with the Examiner. Applicants reassert that there is no motivation to combine the teachings of Boerner with Wu since, despite the Examiner's assertions to the contrary, they are directed to different and non-compatible subject matter.

Boerner is directed to DC electroluminescent displays only. As described at pages 1 and 2 of Boerner, the displays of Boerner include cathodes and anodes; cathodes and anodes are only associated with DC electroluminescent displays. At page 2, lines 28 to 30, it is described in Boerner that it is an object of the invention to provide an electroluminescent display with improved light outcoupling through a transparent cathode and that this object is achieved by the electroluminescent display described at page 3. Furthermore, the only DC electroluminescent displays capable of generating enough blue light for Boerner's invention to work are organic electroluminescent displays (OLEDs). Since the electrical and optical properties of DC

electroluminescent displays are quite different than those of the AC electroluminescent displays described in Wu and the technologies used in each are generally not compatible, one of ordinary skill in the art of DC electroluminescent display technology would not look to AC electroluminescent displays to replace the electroluminescent layer of a DC electroluminescent display with the blue inorganic phosphor layer of an AC electroluminescent display of Wu.

Moreover, Wu does not suggest using an "inorganic electroluminescent phosphor for blue phosphor in the first layer of Boerner". Wu is directed to an AC electroluminescent display, whereby adjacent layers of phosphor materials are provided, each layer representing a different color (see Figure 5). These phosphor layers are patterned, each providing different colors of light as described in detail in columns 18-19 of Wu. Above the patterned phosphor layers are provided a second dielectric layer 23 and a patterned transparent conductor 24 to define the column electrodes. Wu teaches the use of ZnS:Mn, SrS:Ce phosphors in conjunction with optical filters (25a, 25b, and 25c) to produce the specific colors. The filters that are used are for red, green and blue light. The filters are suitable polymer films.

Wu does not teach or suggest wherein its sub-pixels (i.e. 30a, 30b, and 30c) comprise a SrS blue light emitting phosphor AND at least one photoluminescent phosphor associated with the sub-pixel. It is clearly shown in Figure 6 of Wu that only a single phosphor material is present in each sub-pixel. The process for making the AC electroluminescent display of Wu is described in columns 18-19. Initially, a first phosphor is deposited to form one or more of the red, green or blue sub-pixel elements (preferably blue or blue and green) (see column 18, lines 54-64). A photoresist is then applied followed by exposure through a photomask to expose the blue or the blue and green subpixels. Acid etching is then used to remove the first phosphor in the region of the other colored sub-pixels (red or red and green) (see column 19, lines 15-18 and 36-38). Thus, at this point, there is no more first phosphor in these other colored sub-pixels. Then, a second or a second and third phosphor is deposited over the structure for the red or red and green sub-pixels (column 19, lines 41-43). Finally, the second or second and third phosphor is removed from the regions above the first phosphor (column 19, lines 56-58).

In view of this, it cannot fairly be said that Wu suggests using an inorganic electroluminescent phosphor for the electroluminescent layer of Boerner. In Wu, there is a single phosphor composition per sub-pixel of Wu. In contrast, there is a single electroluminescent layer for all sub-pixels of Boerner. In Wu, the blue phosphor composition is not present in the red or green sub-pixels after the lift-off process. In contrast, there is a single blue emitting electroluminescent layer for all sub-pixels of Boerner. In Wu, the different colors of light are provided by the different patterned phosphor layers. There is no color conversion of the blue emission by either of the red or green phosphors; the filters of Wu do not change the color provided by the different etched patterned phosphor layers. In contrast, the different colors of light are provided by color conversion of the blue emission.

There is no color conversion of the blue emission by either of the red or green phosphors in Wu; the filters of Wu do not change the color provided by the different etched patterned phosphor layers other than to remove portions of the emitted color spectrum from the patterned phosphor layers that are not desired for the respective sub-pixels. In contrast, in the present invention, different colors of light are provided for red and green sub-pixels that are not present in the emission spectrum of the blue phosphor composition. For the above-noted reasons, Wu and Boerner are two distinctly different electroluminescent displays using different and non-compatible technologies. As such, one of ordinary skill in the art would not consider that Wu teaches or suggests using its blue light emitting electroluminescent inorganic phosphor of its AC electroluminescent display in the DC electroluminescent display of Boerner.

Therefore, in view of the above, Claim 1 is not rendered obvious in view of the applied teachings of Boerner and Wu. Claims 2-5, 8-11, 16-23, 25, 26, 28-30, 40, 41, 44 and 46 depend or ultimately depend from Claim 1. It is respectfully submitted that these dependent claims are not rendered obvious in view of the applied teachings of Boerner and Wu for at least the same reasons that Claim 1 is not rendered obvious.

With respect to independent Claim 31, the Examiner again asserts that Boerner and Wu disclose all the limitations of Claim 1 and additionally asserts that Boerner discloses each pixel comprising a thick dielectric layer 5 (Figure 1) associated with pixel substructure.

Moreover, the Examiner further asserts that "the claim limitation not reciting any particular thickness of the dielectric layer, the stack of 2n+1 dielectric layers 5 associated with each sub-pixel is considered as thick dielectric layer and hence Boerner discloses each pixel comprising a thick dielectric layer 5 associated with pixel substructure".

Applicant respectfully disagrees with the Examiner.

As described in the background of Applicants' specification, thick film dielectric electroluminescent displays have been developed and are described, for example, in Applicant's U.S. Patent 5,432,015. Thick film dielectric electroluminescent displays provide for superior resistance to dielectric breakdown as well as a reduced operating voltage compared to thin film electroluminescent (TFEL) displays. A thick film dielectric structure deposited on a ceramic substrate withstands higher processing temperatures and facilitates annealing of phosphor films at higher temperatures to improve their luminosity. The terminology "thick film dielectric electroluminescent display" is known by one of ordinary skill in the art and is understood to be a specific type of AC electroluminescent display having a thick film dielectric layer to prevent dielectric breakdown that occurs in thin film electroluminescent displays.

In contrast, and as described above, Boerner is directed to *DC electroluminescent displays only*. Even if one of ordinary skill in the art were to combine the teachings of Boerner and Wu, one would not use a thick film dielectric layer in the display of Boerner. It is described at page 5, lines 21-22, of Boerner that reference numeral 5 represents a stack of individual transparent dielectric layers. Since the dielectric layer described in Boerner must be transparent and it is known that the thick film dielectric layer of thick film dielectric electroluminescent displays are not transparent, one would not use a thick film dielectric layer in the display of Boerner. In this respect, the Examiner will appreciate that If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 123 USPQ 349 (CCPA 1959). Likewise, prior art references must be considered in their entirety, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock,*

Inc., 220 USPQ 303 (Fed. Cir. 1985). Thus, the proposed combination of Wu and Boerner is improper.

In any event, for the reasons noted above, one of ordinary skill in the art would not combine the teachings of the DC electroluminescent display of Boerner with the AC electroluminescent teachings of Wu to provide the claimed invention.

Therefore, in view of the above, Claim 31 is not rendered obvious in view of the applied teachings of Boerner and Wu. Claims 32-39 depend or ultimately depend from Claim 31. It is respectfully submitted that these dependent claims are not rendered obvious in view of the applied teachings of Boerner and Wu for at least the same reasons that Claim 31 is not rendered obvious.

The Examiner rejected Claims 6, 7 and 48 under 35 U.S.C. § 103(a) as being unpatentable over Boerner and Wu and further in view of Siebold.

The Examiner acknowledges that Boerner and Wu do not disclose a reflecting layer. The Examiner asserts, however, that Siebold discloses a reflecting layer as claimed. Claims 6, 7 and 48 depend or ultimately depend from Claim 1. It is respectfully submitted that these dependent claims are not rendered obvious in view of the applied teachings of Boerner and Wu for at least the same reasons discussed above with respect to Claim 1. Thus, the further teaching of a reflecting layer by Siebold does not render the claims obvious.

Similar arguments are made with respect to Cheong (U.S. Patent application Publication No. 2002/0122895), Burns (WO 99/16847), Eida (U.S. Patent No. 5,909,081), and Sokolik (U.S. Patent No. 6,608,439) as the Examiner seems to find one claimed feature in these documents which is not taught or suggested with the claimed sub-pixel substructure. For the reasons discussed above with respect to Boerner and Wu, none of these references, even if appropriately combinable with Boerner and Wu, cures the deficiencies of this combination or teaches or suggests the subject matter of Claim 1 or any claim dependent therefrom.

CONCLUSION

Applicants respectfully request reconsideration of the application in light of the above comments and amendments. Applicants respectfully submit that all pending claims recite patentable subject matter. If there are any issues remaining, the Examiner is encouraged to contact the undersigned in an attempt to resolve any issues.

Respectfully submitted,

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Date

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